MEMORANDUM

To: Florida Department of Transportation, District Three

From: Bryant Brantley, Atkins

Re: Air Quality Analysis for Gulf Coast Parkway, Gulf and Bay County
Financial Project ID: 410911-1-24-01

Date: April 24, 2013

The following air quality analysis was completed for the evaluation of a new alignment from US 98 at CR 386 in Gulf County to US 231 in Bay County, commonly referred to as Gulf Coast Parkway. None of the predicted concentrations for the alternative alignments exceeded the CO National Ambient Air Quality Standards (NAAQS) of 35 parts per million (ppm) for a 1-hour averaging time and 9 ppm for an 8-hour averaging time. Predicted carbon monoxide (CO) concentrations for the opening year (2025) and design year (2035) No Build and Build conditions can be referenced in the documentation below.

CO concentrations are typically highest where vehicles incur delay. Along most facilities such as Gulf Coast Parkway, delay is expected at signalized intersections. The intersection analyzed is the proposed US 98/Tram Road, which has the combination of the highest intersection approach volume and lowest approach speed in Bay County. This intersection was evaluated for the opening year (2025) and design year (2035) No Build and Build conditions using the Florida Department of Transportation (FDOT) CO screening model, CO Florida 2012. Meteorological conditions for North Florida and default (i.e., worst-case) receptor locations were used in the analysis. Table 1 shows the traffic factors used in the analysis. With a suburban land use, all predictions include a background CO concentration of 3.3 ppm for a 1-hour averaging time and 2.0 ppm for an 8-hour averaging time.

Results for the opening year (2025) No Build conditions are provided in Table 2. The highest predicted CO concentrations of 5.4 ppm for a 1-hour averaging time and 3.2 ppm for an 8-hour averaging time. All the predicted CO concentrations for the opening year build conditions are below the NAAQS of 35 ppm for a 1-hour averaging time and 9 ppm for an 8-hour averaging time.

Results for the opening year (2025) Build conditions are provided in Table 3. The highest predicted CO concentrations of 5.8 ppm for a 1-hour averaging time and 3.5 ppm for an 8-hour averaging time. All the predicted CO concentrations for the opening year build conditions are below the NAAQS of 35 ppm for a 1-hour averaging time and 9 ppm for an 8-hour averaging time.

Results for the design year (2035) No Build conditions are provided in Table 4. The highest predicted CO concentrations of 5.4 ppm for a 1-hour averaging time and 3.2 ppm for an 8-hour averaging time. All the predicted CO concentrations for the design year build conditions are below the NAAQS of 35 ppm for a 1-hour averaging time and 9 ppm for an 8-hour averaging time.

Results for the design year (2035) Build conditions are provided in Table 5. The highest predicted CO concentrations of 5.8 ppm for a 1-hour averaging time and 3.5 ppm for an 8-hour averaging time. All the predicted CO concentrations for the design year build conditions are below the NAAQS of 35 ppm for a 1-hour averaging time and 9 ppm for an 8-hour averaging time.

Construction activities will cause minor short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts will be minimized by adherence to all State and local regulations and to the FDOT Standard Specifications for Road and Bridge Construction.

In accordance with the ***Clean Air Act***, this project is in an area which has been designated as attainment for all the air quality standards under the criteria provided in the Clean Air Act Amendments of 1990, therefore, conformity does not apply.

Tables 6 through 9 show the CO Florida 2012 output sheets.

Mobile Source Air Toxics

In addition to the criteria air pollutants for which NAAQS have been promulgated, the USEPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g. air planes), area sources (e.g. dry cleaners) and stationary sources (e.g. factories and refineries). MSATs are a subset of the 188 air toxics defined in the Clean Air Act (CCA). The MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The USEPA is the lead Federal agency for administering the CCA and has certain responsibilities regarding the health effects of MSATs. The USEPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources. 66 FR 17229 (March 29, 2001). This rule was issued under the authority in Section 202 of the CCA. In its rule, the USEPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline (RFG) program, its national low emission vehicle (NLEV) standards, its Tier 2 motor vehicle emissions standards and\gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, even with a predicted 64 percent increase in vehicle miles traveled (VMT) on FHWA projects, on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde are expected to be reduced by 57 to 65 percent. In addition, on-highway diesel Particulate Matter (PM) emissions are expected to be reduced by 87 percent. As a result, the USEPA concluded that no additional motor vehicle emissions standards or fuel standards were necessary to further control MSATs. The agency is preparing another rule under authority of CAA Section 202(1) that will address these issues and could make adjustments to the full 21 and/or the six primary MSATs.

According to traffic data presented in the project's traffic analysis report, Build Alternative Average Annual Daily Traffic (AADT) traffic volumes on the existing road segments analyzed are predicted to range from slightly lower to somewhat higher than the No Build levels, depending on the Build Alternative under consideration. In addition, some Build Alternative traffic speeds on some road segments are predicted to be higher than the No Build Alternative speeds during the same period. For the sixteen road segments analyzed in the Design Year (2035), under Alternatives 8 and 17, 87.5 percent of the road segments would be at LOS C or above while under Alternatives 14, 15, and 19, 56.3 percent of the road segments would operate at LOS C or above. In comparison, in the Design Year (2035) under the No Build Alternative only 25 percent of the road segments analyzed would operate at LOS C or better. Based on this data, the project is expected to result in reduced congestion levels.

For alternatives presented in the Environmental Impact Statement (EIS), the amount of MSATs emitted would be proportional to the VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT of the Build Alternatives is expected to be only slightly higher than that for the No Build Alternative, because additional capacity increases the efficiency of the roadways, reduces congestion and increases vehicle speeds. This increase in VMT would normally lead to higher overall Build Alternative MSAT emissions along the highway corridor. However, this overall increase is expected to be somewhat offset by lower MSAT emission rates due to increased vehicle speeds since emissions of all of the priority MSATs except for diesel PM decrease as speed increases, according to the EPA's Mobile6.2 model. The extent to which these speed-related emissions decreases will offset increases related to higher VMTs cannot be reliably projected due to the inherent deficiencies of available technical models. Because the estimated VMT of the No Build and Build Alternatives are nearly the same, it is expected there would be no appreciable difference in overall MSAT emissions between the alternatives. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of the USEPA's national control programs that are projected to reduce annual MSAT emissions by 72 percent between 1999 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the USEPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The additional travel lanes contemplated as part of the project alternatives will have the effect of moving some traffic closer to nearby air quality receptors; therefore, under each alternative there may be localized areas where ambient concentrations of MSAT could be higher with the Build Alternative than the No Build Alternative. The localized increases in MSAT concentrations at air quality receptors along the alternative alignments would likely be most pronounced along roadway sections that would be built along CR 386 in Mexico Beach and Overstreet areas and in the vicinity of the project termini at US 98 (Tyndall Parkway) and US 231 at Nehi Road, US 231 at Bayline Drive, and US 231 at North Camp Flowers Road. However, the magnitude and the duration of these potential increases compared to the No Build alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. In summary, when transportation capacity improvements are made, the localized level of MSAT emissions for the Build Alternatives could be higher relative to the No Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT levels will be lower in other locations when traffic shifts away from them. However, on a regional basis, USEPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

Unavailable Information for Project Specific MSAT Impact Analysis

The overall lack of available technical tools to enable prediction of the project-specific health impacts of the emission changes associated with the alternatives in this EIS limits the assessment of the potential for MSAT emission impacts due to this project to the basic analysis presented above. Due to these limitations, the following discussion is included in accordance with CEQ regulations [40 CFR 1502.22(b)] regarding incomplete or unavailable information:

Evaluating the environmental and health impacts from MSATs on a proposed highway project would involve several key elements, including emissions modeling, dispersion modeling in order to estimate ambient concentrations resulting from the estimated emissions, exposure modeling in order to estimate human exposure to the estimated concentration,, and then final determination of health impacts based on estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of this project.

- Emissions: The USEPA tools to estimate MSAT emissions from motor vehicles are not sensitive to key variables determining emissions of MSATs in the context of highway projects. While MOBILE 6.2 is used to predict emissions at a regional level, it has limited applicability at the project level. Mobile 6.2 is a trip-based model – emission factors are projected based on a typical trip of 7.5 miles, and on average speeds for this typical trip. This means that MOBILE 6.2 does not have the ability to predict emission factors for a specific vehicle operating condition at a specific location at a specific time. Because of this limitation, Mobile 6.2 can only approximate the operating speeds and levels of congestion likely to be present on the largest =-scale projects, and cannot adequately capture emissions effects of shorter length, smaller scale projects. For PM, the model results are not sensitive to average trip speed, although the other MSAT emission rates do change with changes in trip speed. Also, emission rates used in MOBILE 6.2 for both PM and MSATs are based on a limited number of tests of mostly older-technology vehicles. Lastly, in its discussions of PM under the conformity rule, the USEPA has identified problems with MOBILE 6.2 as an obstacle to quantitative analysis.

  These deficiencies compromise the capability of MOBILE 6.2 to estimate MSAT emissions. MOBILE 6.2 is an adequate tool for projecting emissions trends, and performing relative analyses between alternatives for very large projects (AADT is projected to range from 140,000 to 150,000 or greater in the design year), but it is not sensitive enough to capture the effects of travel changes tied to smaller projects or to predict emissions near specific roadside locations. The USEPA's Office of Transportation and Air Quality (OTAQ) is developing the Motor Vehicle Emission Simulator (MOVES) software model to estimate emissions for on-road and nonroad mobile sources. Although not released yet, when fully implemented, MOVES will provide a far better solution for developing projected emissions inventories applicable to MSAT analyses.

- **Dispersion:** The tools to predict how MSATs disperse are also limited. The USEPA's current regulatory models, CALINE 3 and CAL3QHC, were developed and validated more than a decade ago for the purpose of predicting episodic concentrations of CO to determine compliance with the NAAQS. The performance of dispersion models is more accurate for predicting maximum concentrations that can occur at some time at some location within a geographic area. This limitation makes it difficult to predict accurate exposure patterns at specific times at specific highway project locations across an urban area to assess potential health risk. The National Cooperative Highway Research Program (NCHRP) is conducting research on best practices in applying models and other technical methods in the analysis of MSATs. This work will also focus on identifying appropriate methods of documenting and communicating MSAT impacts in the NEPA process and to the general public. Along with these general limitations of dispersion models, FHWA is also faced with a lack of monitoring data in most areas for use in establishing project–specific MSAT background concentrations.

- **Exposure Levels and Health Effects:** Finally, even if emission levels and concentrations of MSATS could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis preclude us from reaching meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is difficult to accurately calculate annual concentrations of MSATs near roadways, and to determine the portion of a year that people are actually exposed to those concentrations at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emission rates) over a 70-year period. There are also considerable uncertainties associated with the existing estimates of toxicity of the various MSATs, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating impacts. Consequently, the results of such assessments would not be useful to decision-makers, who would need to weigh this information against other project impacts that are better suited for quantitative analysis.

Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of MSATs

Research into the health impacts of MSATs is ongoing. For different emission types, there are a variety of studies that show that some either are statistically associated with adverse health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings) or that animals demonstrate adverse health outcomes when exposed to large doses. Exposure to toxics has been a focus of a number of USEPA efforts. Most notably, the agency conducted the National Air Toxics Assessment (NATA) in 1996 to evaluate modeled estimates of human exposure applicable to the county level. While not intended for use as a measure of or benchmark for local exposure, the modeled estimates in the NATA database best illustrate the levels of various toxics when aggregated to a national or State level.

The USEPA is in the process of assessing the risks of various kinds of exposures to these pollutants. The USEPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The IRIS database is located at http://www.epa.gov/iris. The following toxicity information for the six prioritized MSATs was taken from the IRIS database *Weight of Evidence Characterization* summaries. This information is taken verbatim from the USEPA's IRIS database and represents the Agency's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

- **Benzene** is characterized as a known human carcinogen.
- The potential carcinogenicity of **acrolein** cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
- **Formaldehyde** is a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.
- **1,3-butadiene** is characterized as carcinogenic to humans by inhalation.
- **Acetaldehyde** is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.
- **Diesel exhaust** is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed in this document is the combination of diesel PM and diesel exhaust organic gases.
- **Diesel exhaust** also represents chronic respiratory effects, possibly the primary noncancer hazard from MSATs. Prolonged exposures may impair pulmonary function and could produce symptoms, such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.

There have been other studies that address MSAT health impacts in proximity to roadways. The Health Effects Institute, a non-profit organization funded by the USEPA, FHWA, and industry, has undertaken a major series of studies to research near-roadway MSAT hot spots, the health implications of the entire mix of mobile source pollutants, and other topics. The final summary of the series is not expected for several years.

Some recent studies have reported that proximity to roadways is related to adverse health outcomes – particularly respiratory problems. These studies include: the South Coast Air Quality Management Districts's *Multiple Air Tozic Exposure Study – II* (2000); the Sierra Club's *Highway Health Hazards* (2004) that summarized 24 studies on the relationship between health and air quality; and, the Environmental Law Institutes' *NEPAs Uncertainty in the Federal Legal Scheme Controlling Air Pollution from Motor Vehicles – 35 Environmental Law Review (ELR) 10273* (2005) including health studies cited therein. Much of this research is not specific to MSATs, instead surveying the fullspectrum of both criteria and other pollutants. The FHWA cannot evaluate the validity of these studies, but more importantly, they do not provide information that would be useful to alleviate the uncertainties listed above and enable the FHWA to perform a more comprehensive evaluation of the health impacts specific to this project.

Relevance of Unavailable or Incomplete Information to Evaluating Reasonably Foreseeable Significant Adverse Impacts on the Environment, and Evaluation of Impacts Based upon Theoretical Approaches or Research Methods Generally Accepted in the Scientific Community.

Because of the uncertainties outlined above, a quantitative assessment of the effects of air toxic emissions impacts on human health cannot be made at the project level. While available tools do allow us to reasonably predict relative emissions changes between alternatives for larger project, the amount of MSAT emissions from each of the project alternatives and MSAT concentrations or exposures created by each of the project alternatives cannot be predicted with enough accuracy to be useful in estimating health impacts. (As noted above the current emissions model is not capable of serving as a meaningful emissions analysis tool for smaller projects.) Therefore, the relevance of the unavailable or incomplete information is that it is not possible to make a determination of whether any of the alternatives would have "significant adverse impacts on the human environment".

Green Houses Gasses

Green House Gasses (GHG) cause a global phenomenon in which heat is trapped in the earth's atmosphere. Because atmospheric concentration of GHGs continues to climb, our planet will continue to experience climate-related phenomena. For example, warmer global temperatures can cause changes in precipitation and sea levels. The burning of fossil fuels and other human activities are adding to the concentration of GHGs in the atmosphere. Many GHGs remain in the atmosphere for time periods ranging from decades to centuries.

To date, no national standards have been established regarding GHGs, nor has United States Environmental Protection Agency (EPA) established criteria or thresholds for ambient GHG emissions pursuant to its authority to establish motor vehicle emission standards for CO2 under the Clean Air Act. GHGs are different from other air pollutants evaluated in the Federal environmental reviews because their impacts are not localized or regional due to their rapid dispersion into the global atmosphere, which is characteristic of these gases. The affected environment for CO2 and other GHG emissions is the entire planet. In addition, from a quantitative perspective, global climate change is the cumulative result of numerous and varied emissions sources (in terms of both absolute numbers and types), each of which makes a relatively small addition to global atmospheric GHG concentrations. In contrast to broad scale actions such as actions involving an entire industry sector or very large geographic areas, it is difficult to isolate and understand the GHG emissions impacts for a particular transportation project. Furthermore, presently there is no scientific methodology for attributing specific climatological changes to a particular transportation project's emissions.

Under NEPA, detailed environmental analysis should be focused on issues that are significant and meaningful to decision-making (40 CFR 1500.1(b), 1500.2(b), 1500.4(g), and 1501.7). FHWA has concluded, based on the nature of GHG emissions and the exceedingly small potential GHG impacts of the proposed action that the GHG emissions from the proposed action will not result in "reasonably foreseeable significant adverse impacts on the human environment" (40 CFR 1502.22(b)). The GHG emission from the project build alternatives will be insignificant, and will not play a meaningful role in a determination of the environmentally preferable alternative or the selection of the preferred alternative. More detailed information on GHG emissions "is not essential to a reasoned choice among reasonable alternatives" (40 CFR 1502.22(a)) or to making a decision in the best overall public interest based on a balanced consideration of transportation, economic, social, and environmental needs and impacts (23 CFR 771.105(b)).

Summary

This document does not incorporate an analysis of the GHG emissions or climate change effects of each of the alternatives because the potential change in GHG emissions is very small in the context of the affected environment. Because of the insignificance of the GHG impacts, those local impacts will not be meaningful to a decision on the environmentally preferable alternative or to a choice among alternatives. For these reasons, no alternatives-level GHG analysis has been performed for this project.

Table 1: Traffic Factors

Year		2025 No Build										
Intersection:		US 98/Tram Road Intersection										
Land Use:		Suburban										
	EB			WB			NB			SB		
	No of Lanes	VPH	Speed	No of Lanes	VPH	Speed	No of Lanes	VPH	Speed	No of Lanes	VPH	Speed
US 98							2	2010	55	2	1,761	55
Tram Road				1	92	45						
Year		2035 No Build										
Intersection:		US 98/Tram Road Intersection										
Land Use:		Suburban										
	EB			WB			NB			SB		
	No of Lanes	VPH	Speed	No of Lanes	VPH	Speed	No of Lanes	VPH	Speed	No of Lanes	VPH	Speed
US 98							2	2360	55	2	2052	55
Tram Road				1	126	45						
Year		2025 Build										
Intersection:		US 98/Tram Road Intersection										
Land Use:		Suburban										
	EB			WB			NB			SB		
	No of Lanes	VPH	Speed	No of Lanes	VPH	Speed	No of Lanes	VPH	Speed	No of Lanes	VPH	Speed
US 98							2	2010	55	2	1,765	55
Tram Road				1	484	45						
Year		2035 Build										
Intersection:		US 98/Tram Road Intersection										
Land Use:		Suburban										
	EB			WB			NB			SB		
	No of Lanes	VPH	Speed	No of Lanes	VPH	Speed	No of Lanes	VPH	Speed	No of Lanes	VPH	Speed
US 98							2	2456	55	2	1858	55
Tram Road				2	588	55						

Table 2: Year 2025 Opening Year No Build Conditions

US 98/Tram Road Intersection

Receptor	Peak Hour Traffic Volume	Average Speed (MPH)	1-hr ppm	8-hr ppm
Default Rec 1	2,010	55	5.3	3.2
Default Rec 2	2,010	55	5.4	3.2
Default Rec 3	2,010	55	5.3	3.2
Default Rec 4	2,010	55	4.6	2.8
Default Rec 5	2,010	55	4.3	2.6
Default Rec 6	2,010	55	4.4	2.6
Default Rec 7	2,010	55	4.7	2.8
Default Rec 8	2,010	55	5.2	3.1
Default Rec 9	2,010	55	4.8	2.9
Default Rec 10	2,010	55	4.6	2.8
Default Rec 11	2,010	55	5.4	3.2
Default Rec 12	2,010	55	5.3	3.2
Default Rec 13	2,010	55	5.3	3.2
Default Rec 14	2,010	55	5.3	3.2
Default Rec 15	2,010	55	5.1	3.1
Default Rec 16	2,010	55	4.7	2.8
Default Rec 17	2,010	55	4.7	2.8

Table 3: Year 2025 Opening Year Build Conditions

US 98/Tram Road Intersection

Receptor	Peak Hour Traffic Volume	Average Speed (MPH)	1-hr ppm	8-hr ppm
Default Rec 1	2,360	55	5.8	3.5
Default Rec 2	2,360	55	5.8	3.5
Default Rec 3	2,360	55	5.8	3.5
Default Rec 4	2,360	55	4.8	2.9
Default Rec 5	2,360	55	4.5	2.7
Default Rec 6	2,360	55	4.4	2.6
Default Rec 7	2,360	55	4.8	2.9
Default Rec 8	2,360	55	5.6	3.4
Default Rec 9	2,360	55	5.2	3.1
Default Rec 10	2,360	55	4.8	2.9
Default Rec 11	2,360	55	5.8	3.5
Default Rec 12	2,360	55	5.8	3.5
Default Rec 13	2,360	55	5.8	3.5
Default Rec 14	2,360	55	5.8	3.5
Default Rec 15	2,360	55	5.4	3.2
Default Rec 16	2,360	55	5.0	3.0
Default Rec 17	2,360	55	5.0	3.0

Table 4: Year 2035 Design Year No Build Conditions

US 98/Tram Road Intersection

Receptor	Peak Hour Traffic Volume	Average Speed (MPH)	1-hr ppm	8-hr ppm
Default Rec 1	2,010	55	5.2	3.1
Default Rec 2	2,010	55	5.4	3.2
Default Rec 3	2,010	55	5.1	3.1
Default Rec 4	2,010	55	4.5	2.7
Default Rec 5	2,010	55	4.2	2.5
Default Rec 6	2,010	55	4.3	2.6
Default Rec 7	2,010	55	4.6	2.8
Default Rec 8	2,010	55	5.1	3.1
Default Rec 9	2,010	55	4.6	2.8
Default Rec 10	2,010	55	4.6	2.8
Default Rec 11	2,010	55	5.3	3.2
Default Rec 12	2,010	55	5.3	3.2
Default Rec 13	2,010	55	5.3	3.2
Default Rec 14	2,010	55	5.3	3.2
Default Rec 15	2,010	55	5.0	3.0
Default Rec 16	2,010	55	4.7	2.8
Default Rec 17	2,010	55	4.6	2.8

Table 5: Year 2035 Design Year Build Conditions

US 98/Tram Road Intersection

Receptor	Peak Hour Traffic Volume	Average Speed (MPH)	1-hr ppm	8-hr ppm
Default Rec 1	2,456	55	5.7	3.4
Default Rec 2	2,456	55	5.7	3.4
Default Rec 3	2,456	55	5.7	3.4
Default Rec 4	2,456	55	4.8	2.9
Default Rec 5	2,456	55	4.5	2.7
Default Rec 6	2,456	55	4.4	2.6
Default Rec 7	2,456	55	4.8	2.9
Default Rec 8	2,456	55	5.5	3.3
Default Rec 9	2,456	55	5.2	3.1
Default Rec 10	2,456	55	4.8	2.9
Default Rec 11	2,456	55	5.8	3.5
Default Rec 12	2,456	55	5.8	3.5
Default Rec 13	2,456	55	5.8	3.5
Default Rec 14	2,456	55	5.8	3.5
Default Rec 15	2,456	55	5.4	3.2
Default Rec 16	2,456	55	5.0	3.0
Default Rec 17	2,456	55	5.0	3.0

Table 6: Year 2025 Opening Year No Build Conditions CO Florida 2012 Output Sheets

CO Florida 2012 - Results
Wednesday, April 24, 2013

Project Description

Project Title	Gulf Coast Parkway
Facility Name	US 98 / Tram Intersection
User's Name	Bryant Brantley
Run Name	2025 No Build
FDOT District	3
Year	2025
Intersection Type	East Tee
Speed	Arterial 55 mph
Approach Traffic	Arterial 2010 vph

Environmental Data

Temperature	39.3 °F
Reid Vapor Pressure	13.3 psi
Land Use	Suburban
Stability Class	D
Surface Roughness	108 cm
1 Hr. Background Concentration	3.3 ppm
8 Hr. Background Concentration	2.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	5.3	3.2
2	5.4	3.2
3	5.3	3.2
4	4.6	2.8
5	4.3	2.6
6	4.4	2.6
7	4.7	2.8
8	5.2	3.1
9	4.8	2.9
10	4.6	2.8
11	5.4	3.2
12	5.3	3.2
13	5.3	3.2
14	5.3	3.2
15	5.1	3.1
16	4.7	2.8
17	4.7	2.8

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****************PROJECT PASSES*****************
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
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Table 7: Year 2025 Opening Year Build Conditions CO Florida 2012 Output Sheets

CO Florida 2012 - Results
Wednesday, April 24, 2013

Project Description

Project Title	Gulf Coast Parkway
Facility Name	US 98 / Tram Intersection
User's Name	Bryant Brantley
Run Name	2025 Build
FDOT District	3
Year	2025
Intersection Type	East Tee
Speed	Arterial 55 mph
Approach Traffic	Arterial 2360 vph

Environmental Data

Temperature	39.3 °F
Reid Vapor Pressure	13.3 psi
Land Use	Suburban
Stability Class	D
Surface Roughness	108 cm
1 Hr. Background Concentration	3.3 ppm
8 Hr. Background Concentration	2.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	5.8	3.5
2	5.8	3.5
3	5.8	3.5
4	4.8	2.9
5	4.5	2.7
6	4.4	2.6
7	4.8	2.9
8	5.6	3.4
9	5.2	3.1
10	4.8	2.9
11	5.8	3.5
12	5.8	3.5
13	5.8	3.5
14	5.8	3.5
15	5.4	3.2
16	5.0	3.0
17	5.0	3.0

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*****************PROJECT PASSES******************
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
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Table 8: Year 2035 Opening Year No Build Conditions CO Florida 2012 Output Sheets

CO Florida 2012 - Results
Wednesday, April 24, 2013

Project Description

Project Title	Gulf Coast Parkway
Facility Name	US 98 / Tram Intersection
User's Name	Bryant Brantley
Run Name	2035 No Build
FDOT District	3
Year	2035
Intersection Type	East Tee
Speed	Arterial 55 mph
Approach Traffic	Arterial 2010 vph

Environmental Data

Temperature	39.3 °F
Reid Vapor Pressure	13.3 psi
Land Use	Suburban
Stability Class	D
Surface Roughness	108 cm
1 Hr. Background Concentration	3.3 ppm
8 Hr. Background Concentration	2.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	5.2	3.1
2	5.4	3.2
3	5.1	3.1
4	4.5	2.7
5	4.2	2.5
6	4.3	2.6
7	4.6	2.8
8	5.1	3.1
9	4.6	2.8
10	4.6	2.8
11	5.3	3.2
12	5.3	3.2
13	5.3	3.2
14	5.3	3.2
15	5.0	3.0
16	4.7	2.8
17	4.6	2.8

****
****************PROJECT PASSES*****************
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

Table 9: Year 2035 Build Year Build Conditions CO Florida 2012 Output Sheets

CO Florida 2012 - Results
Wednesday, April 24, 2013

Project Description

Project Title	Gulf Coast Parkway
Facility Name	US 98 / Tram Intersection
User's Name	Bryant Brantley
Run Name	2035 Build
FDOT District	3
Year	2035
Intersection Type	East Tee
Speed	Arterial 55 mph
Approach Traffic	Arterial 2456 vph

Environmental Data

Temperature	39.3 °F
Reid Vapor Pressure	13.3 psi
Land Use	Suburban
Stability Class	D
Surface Roughness	108 cm
1 Hr. Background Concentration	3.3 ppm
8 Hr. Background Concentration	2.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	5.7	3.4
2	5.7	3.4
3	5.7	3.4
4	4.8	2.9
5	4.5	2.7
6	4.4	2.6
7	4.8	2.9
8	5.5	3.3
9	5.2	3.1
10	4.8	2.9
11	5.8	3.5
12	5.8	3.5
13	5.8	3.5
14	5.8	3.5
15	5.4	3.2
16	5.0	3.0
17	5.0	3.0

****
****************PROJECT PASSES*****************
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****